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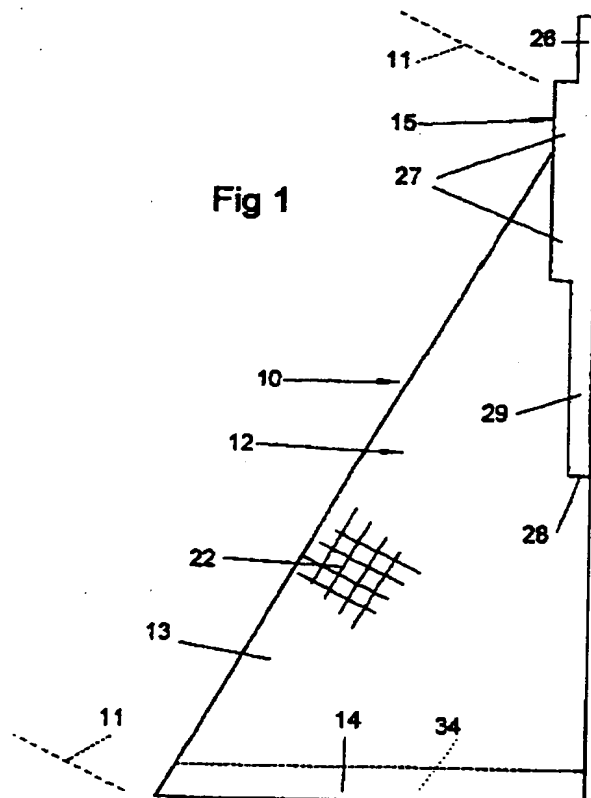
GB 2256854 A GB 0376200 A

(58) Field of Search

UK CL (Edition O ) B8R RRW11  
INT CL<sup>6</sup> B65H 20/00 23/04

(54) Web leader

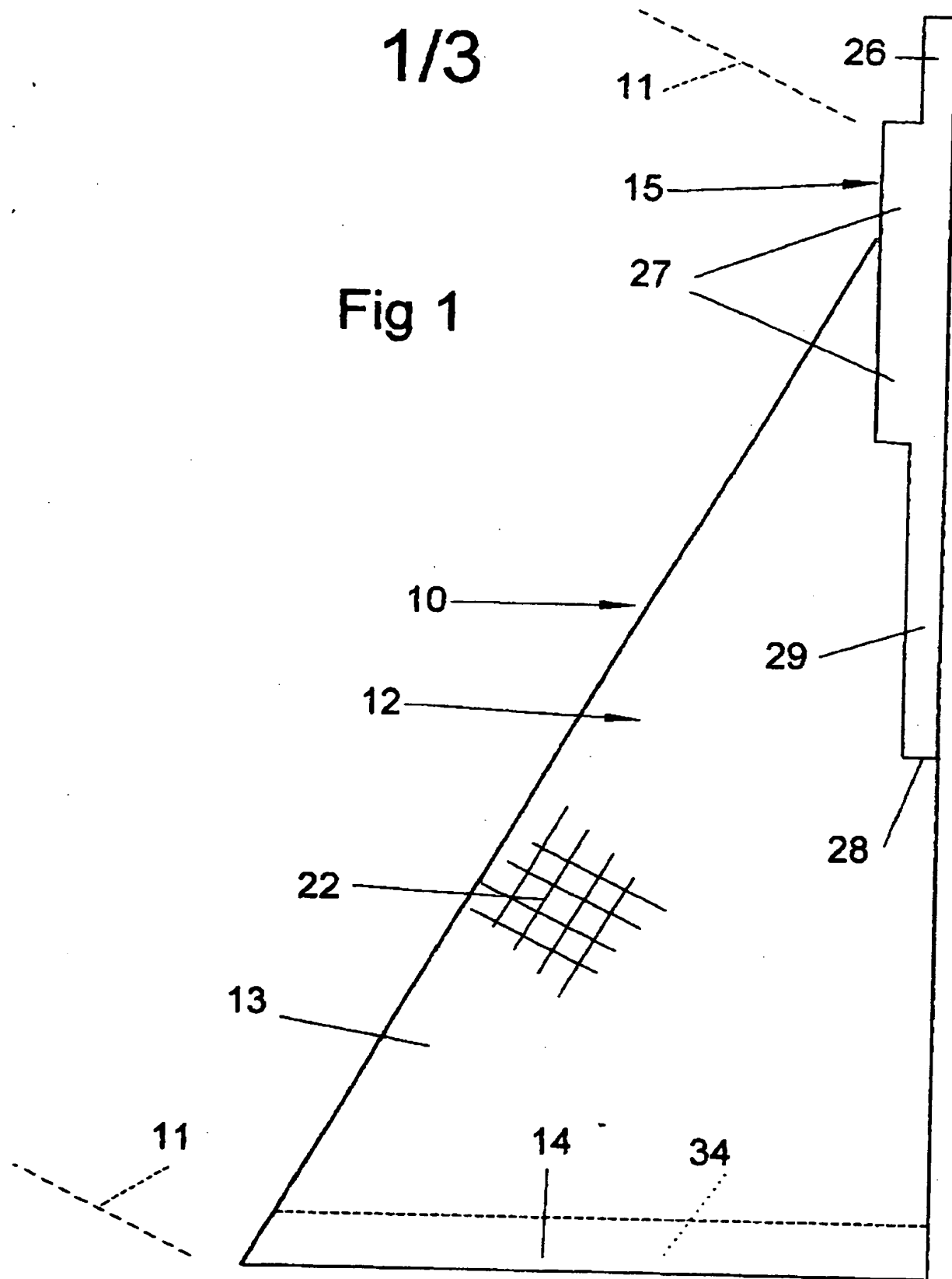
(57) A web leader 10 having the general shape of a right-angled triangle 12 comprises a sheet having outer surfaces of plastics material 13 and, between them, a reinforcement composed of interwoven strands 22 which extend substantially parallel and normal to the hypotenuse. At its base, the leader is provided with attachment means comprising a flap 14 and at its apex a loop 15 for connection to the hauling mechanism, both high-frequency welded to the sheet.



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Fig 1



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Fig 2

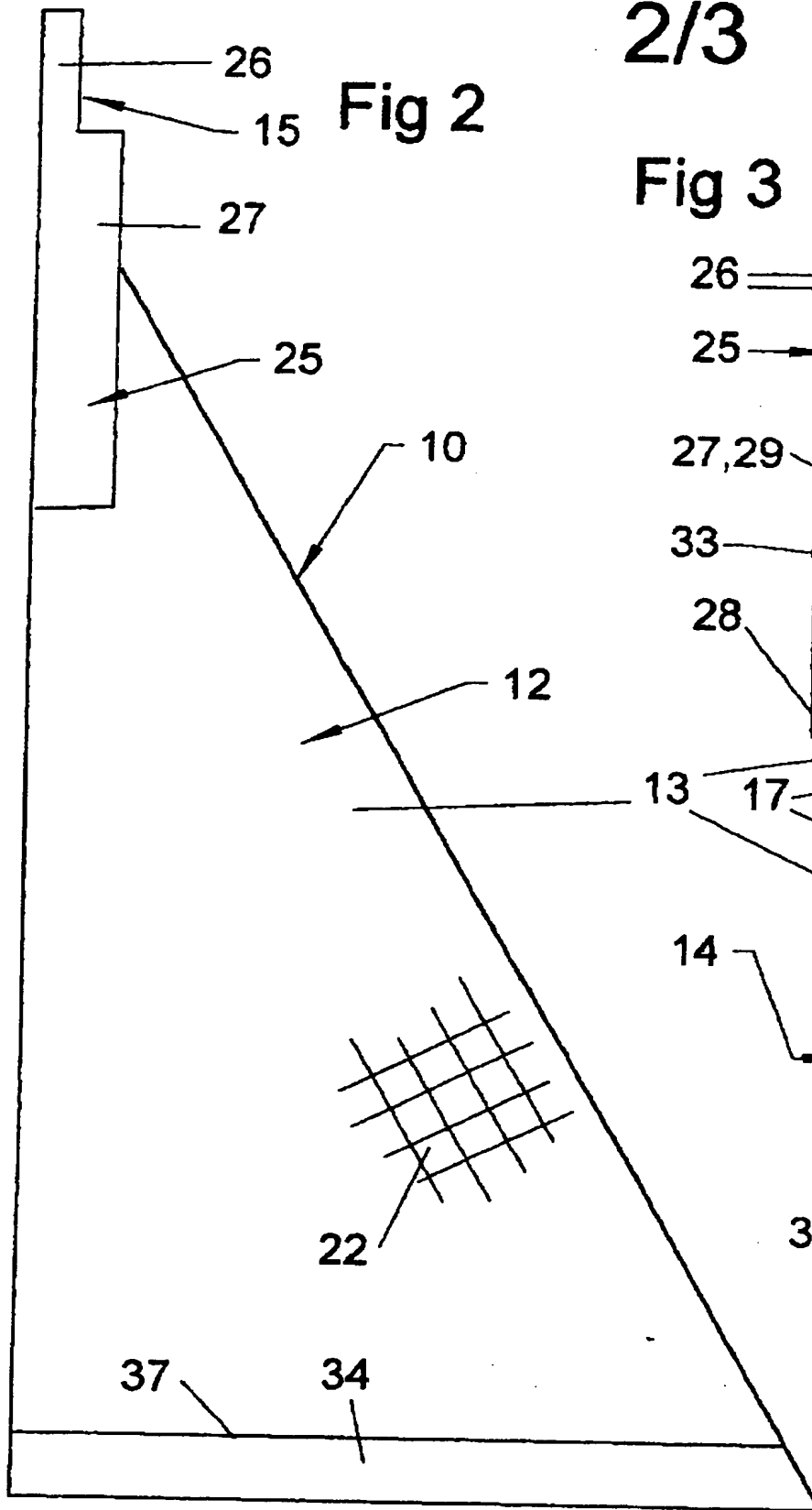
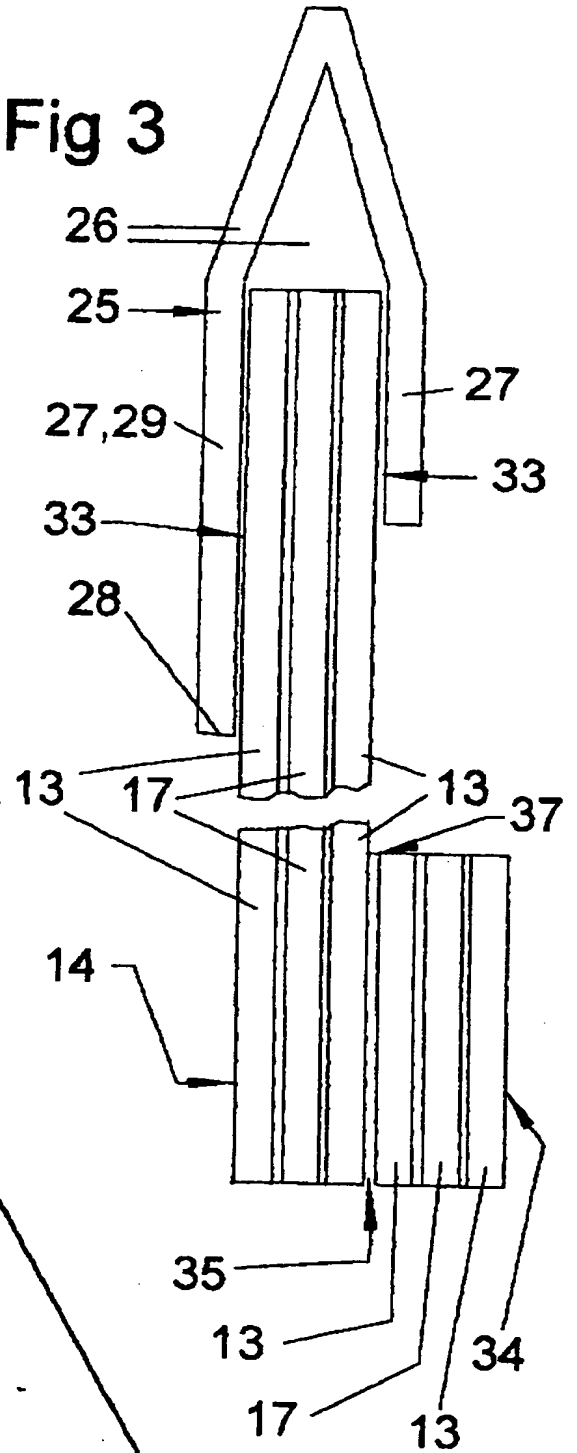


Fig 3



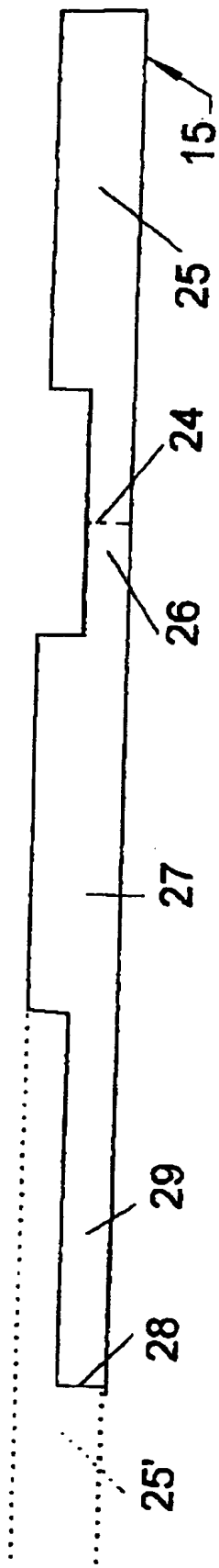


Fig 4

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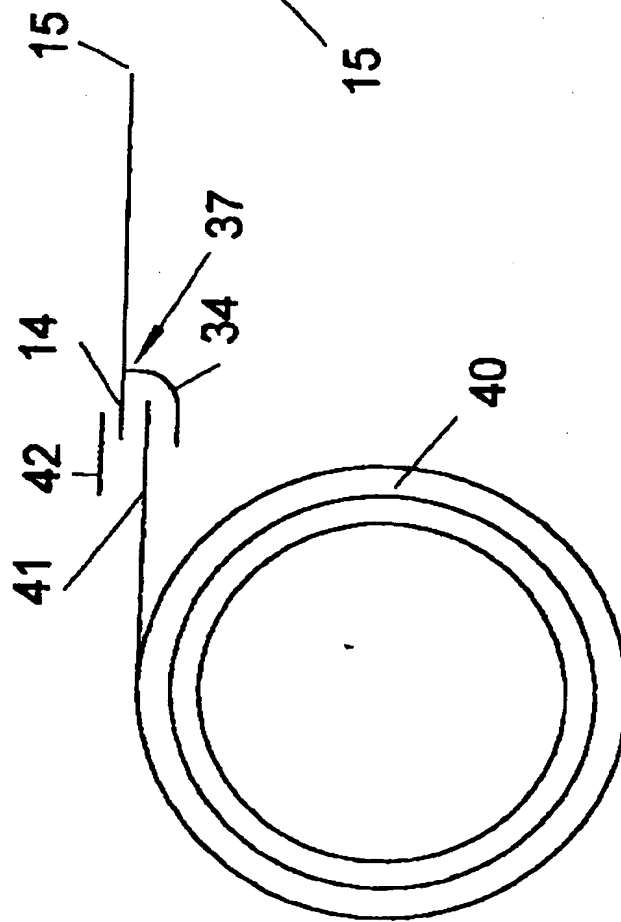


Fig 5

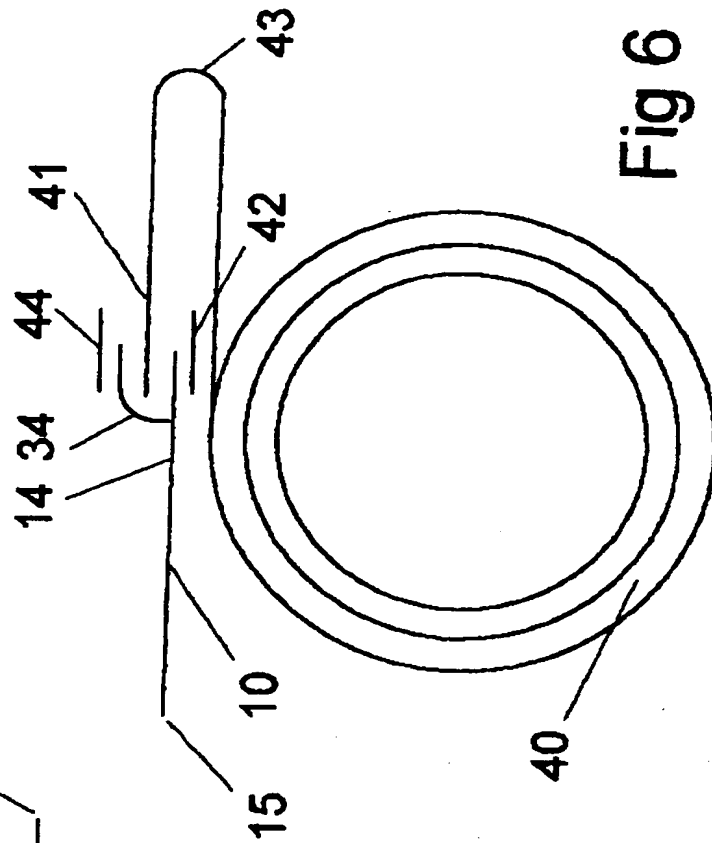


Fig 6

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A LEADER FOR FEEDING WEB MATERIALDESCRIPTION10 Technical Field

This invention relates to the feeding of web material from a reel through a mechanism comprising rolling devices. One particular aspect of the invention is concerned with feeding the leading edge of, for example, paper web from a  
15 reel up to and between the rollers of newspaper printing machinery. In another aspect it is concerned with feeding thin strip metal, e.g. foil, into and through metal rolling mills or metal processing lines.

20 Background to the Invention

To feed a reel of paper into the roll system of a printing press it has been customary to employ a leader, known in the newspaper industry variously as a "kite", a "nose", or a "skirt". This leader usually has the form of a right-  
25 angled triangle of polythene which is attached by tape along its base to the leading edge of the paper and is provided at the apex of the triangle with a loop by which it is attached to a hauling mechanism to haul the leader through the roller system in a direction at right-angles to  
30 the base. The hauling mechanism usually comprises a chain terminating in a hook onto which the loop is hooked, the chain and the vertical edge of the triangular leader passing just outside the edges of the rollers which, when the leading edge of the paper has passed fully through all  
35 the rollers, are closed onto the paper. The triangular leader is then torn away from its joint on the paper, and may be re-used.

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Preparing and using such a leader gives rise to various difficulties and/or time-consuming activities. One of these arises in use in attaching the base of the leader to the leading edge of the paper - conventionally by means of double-sided adhesive tape or "masking" tape between the base edge-adjointing selvage portion and the underlying leading edge selvage of the paper web. Another difficulty is the limited life of the leader which, typically, can only be used 5 or 6 times before it becomes over-stretched and needs to be replaced with a new one. Still another arises from the construction of the triangular leader and the often inadequate attachment of the loop to the apex of the triangular leader which often becomes detached due to debonding caused by residual wash-down liquids on the machinery and/or the tension forces exerted as the considerable length of paper is hauled through the roller system. GB-2256854 proposes solving the loop attachment problem by applying lengths of mutually adhering overlapping tapes to the longitudinal edge of a triangular leader to effect reinforcement of the loop being provided by one of the tapes. This is costly in tape usage and in the time required for manufacture of the leader, and furthermore does not obviate debonding problems caused by residual wash-down liquids on the machinery.

It is therefore considered desirable to provide a leader which obviates one or more of the above-mentioned and/or other disadvantages of the prior art.

### 30 Summary of the Invention

According to one aspect of this invention there is provided an elongate leader for a reel of web material, the leader having at one end a portion for attachment to the leading end of the web material on the reel and having at its other end a portion for attachment to a hauling mechanism to haul the web material along a path through a roller system, characterised in that the elongate leader comprises a sheet



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having its opposed outer surfaces of plastics material and, between them, a woven reinforcement, said reinforced sheet having attachment means high-frequency welded to at least one of said portions.

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Preferably said sheet comprises a woven reinforcement of plastics material, e.g. polyester strands, coated on each side by said plastics material, e.g. polyvinyl-chloride. Advantageously the sheet is of a tarpaulin-like material.

10

Preferably the elongate leader has the general shape of a right-angled triangle having a base edge, an extending edge at right-angles thereto, and an inclined edge along the hypotenuse of the triangle, the strands of said woven reinforcement extending substantially parallel and normal to the inclined edge along the hypotenuse of the triangle. Such an arrangement tends to minimise any tendency for the inclined edge along the hypotenuse to curl over when the leader is in use subjected to hauling tension.

20

The said attachment means may comprise a loop formed by doubling over a strip of material to lie, and be high-frequency welded, to each side of the sheet and project from said other end portion of the sheet. Preferably said strip extends towards, but stops short of, said one end portion to permit a limited degree of longitudinal flexibility and/or stretching of the leader.

25

Alternately or additionally, the said attachment means may comprise a flap (preferably of like sheet material) high-frequency welded to said one end portion to provide a bifurcation which can receive the leading end of the reeled web material. Such an arrangement permits easy connection between the leader and the web and where the web is newsprint or other paper, reduces the lengths of adhesive connection tapes necessary to effect said connection.

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According to another aspect of this invention there is provided an elongate leader for a reel of web material, the leader having the general shape of a right-angled triangle which at its base end is for attachment to the leading end  
5 of the web material on the reel and at its apex end is for attachment to a hauling mechanism to haul the web material along a path through a roller system, characterised in that the elongate leader comprises a sheet having its opposed outer surfaces of plastics material and, between them, a  
10 reinforcement composed of interwoven strands, and in that said interwoven strands extend substantially parallel and normal to the leader's inclined edge extending along the hypotenuse of said right-angled triangle.

15 Brief Description of the Drawings

By way of example one embodiment of this invention will now be described with reference to the accompanying drawings of which:

- Figure 1 is a schematic top plan view of a leader  
20 according to this invention;  
Figure 2 is a schematic underneath plan view of the leader of Fig. 1;  
Figure 3 is a schematic end elevational view of the leader of Fig. 1;  
25 Figure 4 is a schematic view of attachment means for the leader of Fig. 1 prior to its incorporation with that leader, and  
Figures 5 and 6 are schematic side views illustrating connection of the leader of Fig.1 to the leading  
30 edge of web material.

Detailed Description of Example(s) of the Invention

The illustrated leader 10 is for feeding the leading edge 41 (Figs. 5 and 6) of paper web, e.g. newsprint, from a  
35 reel 40 up to and between the rollers of printing machinery, e.g. newspaper printing machinery (not shown).

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The illustrated leader 10 has the general shape of an elongated right-angled triangle 12 (Figs. 1 and 2) which, at its base end, has a portion 14 for attachment to the leading end of the web material on the reel and, at its apex end, has a portion 15 for attachment to a hauling mechanism to haul the web material along a path through the roller system of the printing machinery. The main body of the generally triangular, elongate leader is composed of a tarpaulin-like material, i.e. a sheet having its opposed outer surfaces 13 of a coating of a plastics material such as PVC and, between these outer surfaces, a reinforcement layer formed of interwoven strands 17 of a plastics material such as polyester.

One material found useful for the sheet 12 is the tarpaulin-like material called EDSALAC 610SL (available from Dickson St. Clair) which has a base cloth of high tenacity woven polyester of 1100 dtex coated on both sides with a PVC lacquer. It has a weight of 650g/m<sup>2</sup> and is provided in rolls of 2.5m wide with the weave strands extending longitudinally parallel and normally to the side edges of the roll, these side edges being represented by the reference numeral 11 in Fig 1. The generally-triangular shape of leader 10 is cut from a strip of this tarpaulin-like material such that the strands 22 of said woven reinforcement 17 extend substantially parallel and normal to the hypotenuse of the triangle 12. It is considered that such an arrangement will tend to minimise any tendency for the edge of the hypotenuse to curl over when the leader is in use subjected to hauling tension.

The reinforced sheet has attachment means that are high-frequency welded to at least one, in this embodiment both, of said portions. The high-frequency welding is preferably effected with an electrode pressure in the approximate range of 10kg to 200kg or, with pneumatic operation, up to 315kg, over a workplate area of approximately 760 x 470mm.

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A suitable high-frequency welding apparatus may be the press model FW4/35CW made by Radyne Limited.

At the apex of the right-angled triangle, the attachment means 15 comprises a loop formed by doubling over an elongate element cut in a generally "dog-leg" outline from a strip 25 of reinforced plastics material, e.g. PVC-coated woven webbing of nominal 46mm width and 0.9mm thickness (having an approximate weight of 45 gms/mtr and a minimum tensile strength of approximately 1200kg). The strip 25 is doubled over at 24 (Fig 4) so as to lie, and be high-frequency welded, to each side of the sheet 12 with the bent-over, mutually facing intermediate portions of the strip projecting beyond the apex of the sheet and being left unwelded so as to form a loop 26 with a lateral opening therethrough (see Fig 3). From the apex the strip 25 extends towards the base end portion 14 of the triangular sheet but stops short thereof such the strip's free end 28 is longitudinally spaced from the said base end portion 14. Such an arrangement permits a limited degree of increased flexibility and/or stretching of the leader 10 between the base end 14 and the nearest end 28 of the strip 25.

At this base end portion 14, the sheet is provided with attachment means for the leading end 41 of the reeled web material 40. This attachment means comprises a strip 34 (preferably of weave-reinforced plastics material like that of the sheet 12) that is high-frequency welded at 37 (see Fig 3) to the main sheet's base end portion 14 to form a flap that provides a bifurcation 35 which can receive the leading end 41 of the reeled web material 40. This then permits easy connection between the leader and the web and reduces the lengths of adhesive connection tapes necessary for the so-called "taping-up" process.

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For this "taping-up" process, one or more first adhesive tapes 42 are taped across the overlap boundary between the end 14 (or the strip 34) and the exposed outer surface of the leading end 41 of the outer turn of the reeled web material 40 (see Fig. 5). The leading end of this outer turn is then folded back onto itself, as at 43, (see Fig. 6) and one or more second tapes 44 are then taped across the overlap boundary between the strip 34 (or the end 14) and the now outwardly exposed, inner surface of the leading end 41 of the outer turn of the reeled web material 40.

The elongate leader 10 may have an overall length from apex to base end of approximately 170cms, and may have a width at its base end of approximately 60cms. The right-angle triangle of leader 10 may thus have an included angle at its apex of between  $12^{\circ}$  to  $20^{\circ}$ , preferably  $16^{\circ}$ . The strip of material attached to the base end may have a width dimension (longitudinally of the elongate leader) of approximately 8cms. The elongate element 25 may be cut out, in a generally "dog-leg" formation, from a strip approximately 5cms wide (the above-mentioned preferred material is of nominal 46mm width). The "dog-leg" form of element 25 minimises wastage as a second similar element 25' (shown in broken lines in Fig 4) can be cut, in lengthwise staggered and mirror reversed form, from the strip supply, e.g. a roll of the strip material.

The length of the projecting loop 26 is approximately 5cms and its width approximately 2.3cm, i.e. about half the width of the supply roll. The main reinforcing body 27 of the strip 25 is wider than loop 26 and preferably has a width equivalent to that of the supply roll, i.e. approximately 5cms (nominal 46mm). The extending leg 29 of strip 25 is also about half the width of the supply roll, i.e. about 2.3cms, and is provided to one side only of the leader 10 (see Figs 1-4).

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Although the above-described and illustrated embodiment is concerned with leaders for newsprint, it will be appreciated that it can be readily adopted and/or adapted for use with other paper web material, or, indeed any other web or sheet material rolled up on a reel.

Other modifications and embodiments of the invention, which will be readily apparent to those skilled in this art, are to be deemed within the ambit and scope of the invention, and the particular embodiment(s) hereinbefore described may be varied in construction and detail, e.g. interchanging (where appropriate or desired) different features of each, without departing from the scope of the patent monopoly hereby sought.

15

CLAIMS

1. An elongate leader for a reel of web material, the leader having at one end a portion for attachment to the leading end of the web material on the reel and having at its other end a portion for attachment to a hauling mechanism to haul the web material along a path through a roller system, characterised in that the elongate leader comprises a sheet having its opposed outer surfaces of plastics material and, between them, a woven reinforcement, said reinforced sheet having attachment means high-frequency welded to at least one of said portions.
2. An elongate leader according to Claim 1, wherein said sheet comprises a coating of the said plastics material on each side of a woven reinforcement of the same or another plastics material.
3. An elongate leader according to Claim 2, wherein the woven reinforcement comprises interwoven polyester strands.
4. An elongate leader according to any preceding Claim, wherein each of the said outer surfaces of plastics material comprises a coating of polyvinyl-chloride.
5. An elongate leader according to any preceding Claim, wherein the sheet is of a tarpaulin-like material.
6. An elongate leader according to any preceding Claim, wherein the elongate leader has the general shape of a right-angled triangle having a base edge, an extending edge at right-angles thereto, and an inclined edge along the hypotenuse of the triangle, the strands of said woven reinforcement extending substantially parallel and normal to the inclined edge along the hypotenuse of the triangle.

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7. An elongate leader according to any preceding Claim, wherein the said attachment means comprises a loop formed by doubling over a strip of material to lie, and be high-frequency welded, to each side of the sheet and project  
5 from said other end portion of the sheet.

8. An elongate leader according to Claim 8, wherein said strip extends towards, but stops short of, said one end portion to permit a limited degree of longitudinal  
10 flexibility and/or stretching of the leader.

9. An elongate leader according to any preceding Claim, wherein the said attachment means comprises a flap high-frequency welded to said one end portion to provide a  
15 bifurcation which can receive the leading end of the reeled web material.

10. An elongate leader according to Claim 9 wherein said flap is of like material to said sheet.  
20

11. A method of connecting a leader according to Claim 9 or Claim 10 to the leading end of web material on a reel, wherein said leading end is inserted into said bifurcation and adhesive tapes applied across the junction between the  
25 sheet or flap and the visible outer surface of said leading end, and across the junction between the flap or sheet and the visible inner surface of said leading end.

12. A method according to Claim 11 and substantially as  
30 herein described with reference to the accompanying drawings.

13. An elongate leader for a reel of web material, the leader having the general shape of a right-angled triangle  
35 which, at its base end is for attachment to the leading end of the web material on the reel and at its apex end is for attachment to a hauling mechanism to haul the web material



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5 along a path through a roller system, characterised in that the elongate leader comprises a sheet having its opposed outer surfaces of plastics material and, between them, a reinforcement composed of interwoven strands, and in that said interwoven strands extend substantially parallel and normal to the leader's inclined edge extending along the hypotenuse of said right-angled triangle.

10 14. An elongate leader substantially as herein described with reference to and/or as schematically illustrated in the accompanying drawings.

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# The Patent Office

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Application No: GB 9713234.4  
Claims searched: 1, 13

Examiner: Howard Reeve  
Date of search: 14 August 1997

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B8R (RRW11)

Int Cl (Ed.6): B65H 20/00, 23/04

Other:

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2256854 (ARTHUR RONALD CROUCH), see triangular leader 14	6, 13
X	GB 0376200 (WALTER ARNOLD CLARKE), whole document	1 - 5

DOCKET NO: A-3212

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